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The variation of the long thoracic and uterine arteries in females when lactation and gestation are established, is a familiar example. In animals that move slowly or remain for some time under water, it seems to be sometimes necessary to provide for a slow purling of blood along nervous trunks. In sloths, the Ornithorhynchus and the manatee the main trunks break into plexiform arrangements, and in Cetacea large plexuses encircle the spinal cord. It is conceivable that the original capillary form has never been entirely overcome in these cases. So too in the alimentary canal of man. This, the oldest part of the body when viewed phylogenetically, has also the oldest form of circulation. The activity required is slow, but constant. Removed from external influences, it has not become as highly differentiated in function as the periphery of the body. The polypoid activity of the cells is best kept up by a gradual welling of the blood through a series of encircling capillaries. Even the larger branches show that they are incompletely differentiated. The branches of the mesenteric arteries do not each separately carry blood to the part they are to feed, but unite by cross anastomoses in a series of loops, the whole resembling an enormously enlarged capillary plexus.

If this view of arterial morphology be correct, all varieties found in man and animals should be reducible to the general case prefigured by the radiate fin of fishes. Any important series of exceptions that cannot be derived from the archetype would overthrow the theory.

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THE HAIRY WOODPECKER.

A. G. VAN AKEN.

THE pert, comely and invaluable bird designated in science as *Picus villosus* Linnæus, though known in general parlance simply as the hairy woodpecker, or "sap-sucker," has been variously portrayed by those attempting his biography. Careful inquiry among the masses discloses the fact that he is well and favorably known only to the few specialists in this department of natural history, while diversity of statement and contrariety of conclusion obtains as the rule.

In the present instance our purpose is merely to adduce some *bona fide* observations, gleaned during the past few seasons in New

Jersey, which may assist in determining, at least for the locality whence they were taken, the comparative abundance of the species as resident; the date of nidification; the number of eggs constituting a set, and the value of the bird under consideration to the pomologist.

We shall indicate certain facts brought to notice relative to our sturdy little friend, as we have seen and become intimate with him in his sylvan haunts in this State, while assuming domestic cares.

The compilation of facts from the library, or the examination of the skins of defunct specimens in some museum, we generously consign to those who attach more importance to this popular method than we are wont to accredit to it.

Ornithologists have assigned as the habitat of this species the Eastern section of the United States, though practically they differ as regards the abundance or even presence of the "hairy" in many sections of this district. We have found them moderately abundant here (New Jersey) in favorable localities, especially in the central portions of the State. The close resemblance existing between the hairy and the downy woodpecker (*Picus pubescens* Linnæus) in plumage, contour and habit has rendered the presence of the former often unnoted. The exercise of proper care, even by the beginner, will obviate such confounding of the cousins. The former averages 9-10 inches in length, the latter only 6-6½ inches, so that one may quite readily detect the "hairy" by his superior size. There are other well-defined distinctions, but that alluded to answers general purposes with little chance for error. Our experience during the past three seasons, making identification certain in each instance, has been the finding of almost or quite as many nests of the hairy as of the downy woodpecker, though some may be disposed to question such a statement. It is a fact, however, for which we vouch, and can easily adduce proofs therefor.

The date for nidification and the complement of eggs have caused us considerable trouble and annoyance. Thus writers are wont to state "four to five eggs are laid about May 1st-10th," crediting which we sought to arrange our plans for the securing of a set of eggs for the cabinet, in accordance therewith. But instead of being crowned with success, all our efforts were abortive. We were careful to secure date and number of eggs in reference to several nests that we found, certain of which were as follows: On

May 13th, 1880, we discovered our first authentic nest of the hairy woodpecker. It was situated in a partially dead swamp maple, nearly thirty feet from the ground. Though the day was warm, the shaft of the tree smooth, without limb or excrescence of any sort to assist us in shinning up to the coveted nest, we determined to secure the eggs if possible. We had nearly reached the entrance to the woodpecker's home, when, imagine our dismay, at seeing three young birds dart out of the hole and run nimbly up amid the topmost branches of the tree.

On or about April 20th, 1881, a friend detected a pair of these birds building a nest in a dead basswood, about twenty feet from the ground. Waiting about one week, he repaired to the tree and carefully sawed out a piece of the wood some ten inches below the hole and found the nest to contain three eggs. This he pondered was not a full set, so replacing the piece of wood and securely tying it, as he thought, with strong cords, he awaited the laying of one or two additional eggs. When we visited the tree again we were chagrined to find the cords cut by the sharp bills of the parent birds, the block, which had been sawn out, fallen to the ground and the eggs gone. Whether the old birds did not like the cords or were merely of an investigating turn of mind and wished to test the strength of the fastenings, or were actuated by a spirit of pure "cussedness" in destroying the nest and contents, we did not consider it worth while to inquire, but, deeming ourselves commiserable, decided that the very next time we were confronted with a set of three hairy woodpecker's eggs we would—wait for the appearance of one or two more? oh, no; rather secure the three despite the statements of the books that four to five composed a set, leaving to some other novice the verification of this statement.

Again, on April 28th, 1882, while passing through a tract of woodland, our attention was directed to a circular hole, deftly chiseled in a dead maple, whose top had been broken off by the wind. The hole was only a few inches below where the top had been carried away and about twenty to twenty-five feet from the ground. Our rap on the tree with a stick quickly brought one of the old birds to the entrance, when, perceiving us, very little time was lost in deserting this for an adjacent tree, where, in response to a few sharp notes, the mate delayed not to also take position and to unite in sounding a general alarm. After sawing out a piece

large enough to admit of an examination of the nest, we found only three eggs. We had almost forgotten the experience of the past season, so, instead of using cord to secure the piece which we had removed in position again, we nailed it in and departed, that the female might deposit the one or two eggs still wanting to make the number required by the statement of the books. Three days subsequent, viz., on May 1st, we again examined the nest by removing the nails and found that it contained, as before, three eggs; but there was this difference, now each egg was pecked and a young bird chirped at us from within the compliments of the day. This was an unlooked for as well as unappreciated greeting; so, closing up the aperture, we departed in disgust. We had in imagination already placed the set of glossy white eggs in our collection, in fact we had not counted our birds before they were hatched, but *our* eggs had hatched into birds, a possibility which we had not counted upon at all; an occurrence, by the way, not rarely met with by the procrastinating oölogist of limited experience. Two other nests, quite similarly situated, each contained young birds on May 8th and 10th, respectively.

It will be observed in the five instances above cited, the orthodox date and number of eggs in a set were not conformed to, a fact which we regretted very much, since we had pinned our faith upon the statements of eminent authorities in the matter. Perhaps these were very erratic specimens of this demure species which we chanced to encounter; we know not that this was the case, but this we do know, the facts stand as stated. Another season's experience similar to the foregoing will militate very strongly against the books as regard this section in the matter of the nidification of the hairy woodpecker. We shall assume in our personal operations the coming season that April 25th will do very well as the date to seek for the hairy's nest, and that three will make a set of eggs, though should we discover four or even five we will not reject them on that score.

A single word in reference to the value of the hairy woodpecker to every fruit-grower, despite a popular prejudice that strangely enough is still extant in many portions of our country, which finds expression in the persecution and extermination system adhered to by presumably educated men. True, the Count de Buffon painted in most sombre colors the entire family as "being condemned by *Nature* to incessant toil and slavery, dragging out an insipid exist-

ence, being a peculiarly wretched example of the inequality of the distribution of happiness," and many writers of more recent date, despite the eloquent refutation of the calumny by our greatest ornithologist, Alexander Wilson, seem to be imbued with a like spirit. But what is the true state of the case as vouched for in the testimony of every true working, field ornithologist?

A beneficent Providence has richly endowed the family of woodpeckers with qualities of rare excellence and worth. Especially is this true of the hairy. The principal count in the indictment against him, that he bores the bark of fruit and other trees in order to feed upon the sap and inner bark, will not stand, being utterly false. An extended examination of the contents of the stomach of this bird invariably fails to disclose an appreciable amount of either, but in their stead a huge mass of insects and larvæ. The perforations which he makes are merely for the purpose of securing his quarry from their ensconce neath the bark out of the reach of other agencies. His is a work of destruction and death—the dislodgment and consuming of myriads of borers, &c.—not harm to the tree, but beneficial, as attested in innumerable instances. In this despised, persecuted bird, we have a true friend and effective co-worker, very materially assisting us in gathering an ample return of perfect fruit for the labor and care expended to this end in orchard, vineyard or garden. Ignorance and prejudice have no place amid the general intelligence and humane principles of to-day and should not be tolerated. Let no one, then, wantonly destroy either eggs or parent bird, but carefully foster and protect them, even using his influence to secure the punishment of all thus rendering themselves amenable to law and the just condemnation of every intelligent person.

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EDITORS' TABLE.

EDITORS: A. S. PACKARD, JR., AND E. D. COPE.

— The Government of the United States is displaying a liberality towards scientific research which is worthy of high praise. The position assumed by our legislators on this subject is in accordance with the spirit of the age, and represents the intellectual status of the American people among the civilized nations. The appropriations made by Congress for the development and exposition of our resources have kept pace in amount with the increase